METHOD AND APPARATUS FOR BROADCASTING VEHICLE MESSAGE

CROSS-REFERENCE TO RELATED APPLICATION

[0001] This application claims the benefit under 35 USC 119(a) of Korean Patent Application No. 10-2015-0144518, filed on Oct. 16, 2015, in the Korean Intellectual Property Office, the entire disclosure of which is incorporated herein by reference for all purposes.

BACKGROUND

[0002] 1. Field

[0003] The following description relates to a method and apparatus for broadcasting a vehicle message. More particularly, the following description relates to a method and apparatus for broadcasting a vehicle message using wireless communication schemes.

[0004] 2. Description of Related Art

[0005] Due to advances in various sensing technologies, technology for sensing a state of a vehicle and using sensed information related to the vehicle has been developed. In particular, a technology associated with a vehicular communication network has been developed. The vehicular communication network may be used to transmit information of a vehicle to another vehicle to assist driving of the vehicle.

[0006] The vehicular communication network may be divided into an in-vehicle network (IVN) and an out-vehicle network. The IVN refers to a wired or wireless communication network between sensors or electronic devices in a vehicle. The out-vehicle network may be further divided into a vehicle-to-infrastructure (V2I) network and a vehicle-to-vehicle (V2V) network. The V2I network is a vehicular communication infrastructure technology including communication between a vehicle and a road side unit (RSU) or other non-vehicle communication devices. For example, the vehicle may receive traffic information and safety support services from the RSU through the V2I. The V2V network is an autonomous vehicle network technology including wireless communication between vehicles. For example, a driver may receive messages that enables safer driving from neighboring vehicles through the V2V, e.g., to prevent traffic accidents. Thus, the V2V is a communication network that may be associated with safety of a driver, and there is a desire for reliability and real-time performance for the V2V.

SUMMARY

[0007] This Summary is provided to introduce a selection of concepts in a simplified form that are further described below in the Detailed Description. This Summary is not intended to identify key features or essential features of the claimed subject matter, nor is it intended to be used as an aid in determining the scope of the claimed subject matter.

[0008] A vehicle message broadcasting method includes determining whether a transmission power set for broadcasting a message by a communication device using a first wireless communication scheme is to be adjusted, the first wireless communication scheme being used to transmit a safety message (SM), broadcasting a safety message (SM) using the first wireless communication scheme with a transmission power based on a result of the determining, broadcasting at least one additional message including information included in the SM and/or information related to the SM using a second wireless communication scheme having a wider coverage than a coverage of the first wireless communication scheme.

[0009] The first wireless communication scheme may be a dedicated short-range communications (DSRC) scheme based on an Institute of Electrical and Electronics Engineers (IEEE) 802.11p standard.

[0010] The first wireless communication scheme may be a wireless communication scheme based on an IEEE 802.11p standard, and the second wireless communication scheme is a cellular communication scheme.

[0011] The first wireless communication scheme and the second wireless communication scheme may be wireless communication schemes based on an IEEE 802.11p standard, and a frequency channel of the first wireless communication scheme may be different than a frequency channel of the second wireless communication scheme.

[0012] The at least one additional message may include an additional message that includes same information as information included in as the SM.

[0013] The at least one additional message may include an event message (EM) generated in response to an event related to a vehicle and related to the SM.

[0014] The EM may include location information corresponding to a location of the event.

[0015] The vehicle message broadcasting method may further include generating the SM, wherein the generating of the SM includes acquiring information related to a vehicle, and generating the SM based on the information related to the vehicle.

[0016] The generating of the SM may further include detecting an event related to the vehicle, and, may further include information about the event to the SM and generating the SM in response to the event being detected.

[0017] The vehicle message broadcasting method may further include generating the additional message, wherein the generating of the additional message includes detecting an event occurring in the vehicle and generating the additional message based on the detected event.

[0018] The determining of whether the transmission power may include calculating a transmission success rate of the SM transmitted using the first wireless communication scheme; and determining to adjust the transmission power lower in response to the transmission success rate being determined to be less than a threshold success rate.

[0019] The determining of whether the transmission power is to be adjusted may include determining to adjust the transmission power based on determined properties of at least one externally received SM.

[0020] The determining to adjust the transmission power based on the at least one external SM may include, in response to a number of the neighboring vehicles identified by the plurality of external SMs is determined to be equal to or greater than a preset threshold, determining to adjust the transmission power lower.

[0021] The vehicle message broadcasting method may further include receiving a guide from a road side unit (RSU), and the determining of whether the transmission power is to be adjusted may include determining, based on the guide, whether the transmission power is to be adjusted.

[0022] A vehicle message broadcasting apparatus includes a processor configured to determine whether a transmission power of a first wireless communication scheme is to be